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MARCH 1986 NUMBER 211

MONTHLY REPORT

ON THE NUCLEAR FUEL MARKET

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MONTHLY REPORT ON THE NUCLEAR FUEL MARKET

March 1986 No. 211

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To Our Readers

Nuexco will host a hospitality suite during the Atomic Industrial Forum's Fuel Cycle Conference in Phoenix, Arizona, April 1-4, at the Sheraton Scottsdale Resort. We look forward to seeing you there.

* * *

Nuexco soon will mail the 1985 Annual Review to our full-service subscribers. This Special Report covers major nuclear fuel market developments throughout the world in 1985 and early 1986. In particular, it analyzes the condition and pricing trends of the spot/near-term markets for uranium and secondary market enrichment services. Nuexco market values for 1985 have been brought together in a series of tables for reference.

If you would like to purchase copies of the 1985 Annual Review, they are available for $100 each. Please contact Clark Beyer at our Headquarters:

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NATURAL URANIUM AND SECONDARY MARKET CONVERSION

(All data as of February 28, 1986)

The **Exchange Value** is **$17.00** per pound U_3O_8, unchanged since last month. **Active supply** of natural uranium (concentrates and UF_6) for spot or near-term delivery totals **2,405,000** pounds U_3O_8 equivalent, down 1.5 million pounds since last month. The corresponding figure for **active demand** is **975,000** pounds, down 1.8 million pounds. The spot and near-term **supply-demand ratio** declined to **2.5:1.**

The *Current Market Data* section of this Report lists four natural uranium sales and one of low-enriched uranium, involving approximately 1,000,000 pounds equivalent U_3O_8. All of the transactions involved near-term delivery and three met the criteria for inclusion in the current Transaction Value calculation. One transaction involved natural UF_6.

The **Transaction Value** is **$16.70** per pound U_3O_8, up $0.15 since last month. The calculation extends over a 5-month period and includes 16 transactions involving 2.6 million pounds equivalent U_3O_8.

The **UF_6 Value** is **$48.00** per kilogram U in UF_6, up $1.00 since last month.

The **Conversion Value** is **$1.80** per pound U in UF_6, up $0.20 since last month. Active supply of secondary market conversion services for delivery within three years totals 865 thousand pounds U as UF_6. Active demand totals 950 thousand pounds U as UF_6. No secondary market conversion transactions are reported.

The **Loan Rate** is unchanged at **5 percent** per annum.

* * *

The Exchange Value remained at $17.00 as significant quantities of uranium near that price level were still available as of the end of the month. There was some market activity, on the order of one million pounds, but the market-clearing purchasing that occurred at the time of the last price rise did not occur in February. This month, one transaction involving a smaller quantity for near-term delivery took place slightly above the current Exchange Value, but some larger quantities for later delivery command effective prices nearer to the Exchange Value. Without large blocks of hard demand as of the end of the month, there are no strong forces acting to drive up prices, and buyers generally are reluctant to pay significantly more than $17.00 for immediate to near-term delivery. This situation will continue until the remaining material priced at $17.00 is cleared from the market. Currently, there is insufficient near-term demand to sustain the gradual upward price movement that began in mid-1985. Throughout the next six months, however, some of the longer-term requirements of many utilities are likely to move into the near-term market.

Despite the lack of movement in the Exchange Value, the UF_6 Value rose slightly to $48.00 this month. Generally, the UF_6 market is thinner than that of concentrates, i.e. the supply and demand of U_3O_8 usually exceeds that of UF_6, and utilities' primary conversion commitments often lessen their desire to obtain uranium in the form of UF_6. Thus, the market for UF_6 is inherently more sensitive to small changes in supply-demand relationships, changes in the conversion market, and other external events than is the market for concentrates. This market sensitivity was demonstrated this month in particular, as two circumstances accounted for the rise in the UF_6 Value:

1. Although active near-term demand for uranium in any form is small, much of the current demand is for UF_6.

2. The firming of the secondary market for conversion services, probably due in part to uncertainties of supply from Sequoyah Fuels' conversion facility, has created slightly more interest in UF_6. Thus, because it does not need to be converted, UF_6 is more fungible than U_3O_8. Nuexco expects to see a significantly greater interest in UF_6 emerge if operations at the Sequoyah Fuels plant do not resume in the next several weeks.

* * *

The Conversion Value rose to $1.80 this month, the first change in that value since June 1985, as a significant quantity of demand entered what had been a rather dormant market. Over the past six months, buyers required prices around the $1.60 level to become sufficiently motivated to take secondary market conversion services. Some discretionary sellers moved in and out of the market, usually unwilling to accept that price. Because of the temporary halting of operations at one of the five free world conversion facilities, however, several large blocks of demand appeared. Some utilities will likely begin redistributing excess conversion, either through secondary market sales or even UF_6 loans, if Sequoyah Fuels is not allowed to resume operations within the next several weeks.

* * *

ENRICHED URANIUM AND SWUS

The **SWU Value** as of February 28, 1986, is $80 per SWU. This refers to SWU at a tails assay of 0.30 weight-percent U_{235} and for delivery within one year. Four secondary market SWU transactions are reported this month, involving approximately 200 thousand SWUs.

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In the wake of four transactions, the secondary market for SWU is extremely thin, and quantities as low as ten thousand SWU can have a significant effect on the market. Depending upon the individual needs of the buyer and seller, large premiums or discounts can be required in order to conclude transactions. One utility with a large block of SWU was apparently poised to enter the market near the end of February, but the SWU did not appear for sale as of the last day of the month. If the seller enters the market, however, its presence could have a considerable effect on prices, provided buyers emerge.

* * *

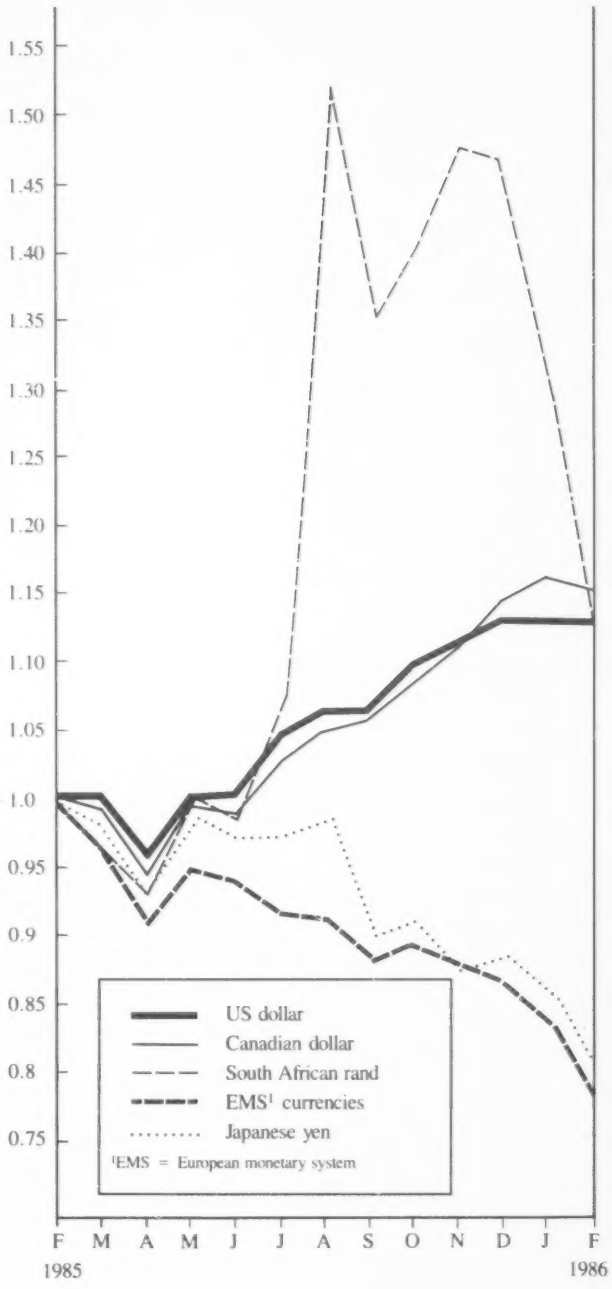
RECENT EFFECT OF US DOLLAR EXCHANGE RATES ON URANIUM PRICES

Changes in the value of the US dollar relative to other currencies have had an important effect on the uranium market in recent months. One year ago, the US dollar reached a record high against many non-US currencies at the same time that uranium prices expressed in US dollars reached their lowest level in ten years. Since February 1985, the US dollar has declined steadily against the Japanese yen and European currencies. (European currencies are linked by the European Monetary System (EMS[1]), so changes in the dollar value of the French franc and the West German mark, for example, have been virtually identical.) The result, illustrated in the following table and figure, is that uranium prices in many consumer countries have declined sharply in recent months even though prices expressed in US dollars have risen. This trend has improved the market for many non-US uranium buyers, but has worsened the condition for European sellers.

The situation has been different in recent months for the two largest uranium-producing countries, Canada and South Africa. The Canadian dollar is more closely linked to the US dollar than to European currencies, and has maintained its position relative to the US dollar until the past three months, when the US dollar has in fact gained against the Canadian dollar to the benefit of Canadian sellers. The value of the South African rand has fluctuated dramatically over the past year. Although it followed the develoment of other non-US currencies in the first half of 1985, the economic and political crisis in the second half of the year caused prices in rands to rise to unprecedented levels, making 1985 a record year for South African producers, which price most of their contracts in US dollars. Over the past month, the value of the rand has strengthened with the recovery of the South African financial system.

[1]The EMS is an agreement among several European countries, including Belgium, the Federal Republic of Germany, France, Italy, and the Netherlands, that keeps the exchange rates among the various participating currencies within a narrow trading range, except in cases of official devaluations. For example, Italy devalued the lira in the fall of 1985.

RATIO OF RECENT EXCHANGE VALUES TO EXCHANGE VALUE OF FEBRUARY 28, 1985 MEASURED IN SELECTED CURRENCIES



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EXCHANGE VALUE IN SIX SELECTED CURRENCIES FROM FEBRUARY 1985 TO FEBRUARY 1986[1]

Month/Year	USA (dollar)	Canada (dollar)	Fed. Rep. Germany (mark)	France (franc)	South Africa (rand)	Japan (yen)
Exchange Values						
Feb 85	15.00	20.73	49.85	152.39	30.00	3881
Mar 85	15.00	20.53	46.90	143.13	28.71	3793
Apr 85	14.25	19.49	44.36	135.46	27.75	3598
May 85	15.00	20.64	46.30	140.98	29.97	3773
Jun 85	15.00	20.45	45.76	139.41	29.50	3732
Jul 85	15.75	21.29	44.50	135.43	32.21	3739
Aug 85	16.00	21.78	44.46	135.82	45.71	3793
Sep 85	16.00	21.98	42.94	130.61	40.30	3458
Oct 85	16.50	22.55	43.43	132.32	42.04	3507
Nov 85	16.75	23.08	42.62	129.85	44.14	3368
Dec 85	17.00	23.78	41.87	128.40	43.87	3413
Jan 86	17.00	24.14	40.38	123.82	38.72	3275
Feb 86	17.00	23.97	37.91	116.28	33.66	3077
Currency Exchange Rates (per US dollar)[1]						
Feb 85	1.00	1.38	3.32	10.16	2.00	259
Feb 86	1.00	1.41	2.23	6.84	1.98	181
Net percent change against US dollar between February 28, 1985 and February 28, 1986	—	− 2	+33	+33	+ 1	+30
Net percent change of Exchange Value in given currency between February 1985 and February 1986	+13	+16	−24	−24	+12	−21

[1] Exchange Values are as of the last day of the month indicated. Currencies calculated using currency exchange rates published in the *Wall Street Journal* as of the last day of the month indicated.

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RECENT DOE ENRICHMENT DEVELOPMENTS

In late January 1986, the US Department of Energy (DOE) implemented aggressive moves to reinforce its position against both the legal challenge to its US Enrichment Contract (USEC) and the competitive challenge offered by other enrichment suppliers. The following analysis focuses on the two issues, their relationship and the possible consequences for DOE and its enrichment customers.

Customer Response to the Incentive Pricing Campaign

In late 1985, DOE announced an incentive pricing offer for FY91-95 enrichment services (Report 209), part of a series of moves designed to enhance its competitive position. The campaign was aimed at those utilities that had signed the USEC and had any unfilled requirements in that time period. The offer stipulates a base price of $85 per SWU for all uncommitted requirements. The base price is escalated according to changes in the US Gross National Product Implicit Price Deflator (GNPIPD) from the second quarter of 1985 until the second quarter of the calendar year preceding the fiscal year of delivery. (The GNPIPD is an indicator of inflation compiled by the US Department of Commerce, and is currently rising at a rate of approximately three percent per year.)

DOE established February 21, 1986 as the final date to accept the incentive price package. DOE probably hoped to force rapid decisions on its customers, as the deadline allowed little time for utilities to analyze alternate courses of action and for DOE's competitors to respond. DOE may have reasoned that its customers, lacking the time and information to consider all the financial, competitive, and flexibility implications of the offer (and of the proposed revision of the enrichment criteria), would choose the path of least resistance by accepting the new incentive package.

It is difficult to measure accurately the success of DOE's strategy. While February 21 was supposed to be the final date for accepting the new package, in fact the offer was still open as of the close of business on February 28. DOE refused to comment on which and how many customers had accepted. Nuexco's information indicates that in Europe all but one utility refused the offer. An informal telephone survey of US utilities revealed that some had accepted outright, at least ten had declined, and some had asked for extensions to study the matter further. In addition, some utilities accepted but attached conditions such that the "acceptances" might more properly be described as counter-proposals. For instance, one utility conditioned its acceptance on the absence of any uranium import embargo, while another acceptance was conditioned on basis that the required payback to the US Treasury not exceed a specified amount. It seems likely that DOE's new business-oriented approach was a factor in the conditioned acceptances. Because DOE had indicated that it would negotiate, its customers apparently are doing precisely that. Ultimately, the positive response to the FY91-95 incentive price offer will probably fall far short of the response to the FY87-90 offer.

The lack of enthusiasm for the FY91-95 proposal is not surprising considering the following circumstances:

1. The uncertainty surrounding the USEC may have discouraged some utilities from placing even greater reliance on a supplier that may not be able to deliver services under an invalidated contract.

2. Similarly, some utilities may have determined that committing 100 percent of requirements to DOE as much as ten years in the future may leave them vulnerable to DOE's mandates for cost recovery and investment payback, which might take the form of uncompetitive pricing terms, delivery schedules, and termination charges.

3. The economic gains contained in the offer may have appeared too inconclusive and undemonstrable for some customers. The low price probably will not be *exceptional* in the enrichment market in the coming years, assuming current trends continue.

SWU prices are likely to decline still further over the next 10-20 years, as enrichment plant loads increase and lower-cost technologies are developed and implemented. DOE in particular has lowered its SWU price from $150 in FY84 to $135 in FY85, to $125 in FY86, and to $119 in FY87. While it is not certain that DOE will continue to lower the USEC base price, it is conceivable that the incentive price may closely approach the primary price in the 1990s.

Proposed New Criteria Governing Enrichment

On January 29, 1986, DOE formally proposed new criteria to govern its uranium enrichment contracts. The new criteria, submitted in a proposed amendment to the US Code of Federal Regulations, constituted the first substantial response to the ruling by a US District Court in September 1985 that the USEC does not conform to the existing criteria governing DOE contracts and therefore is "null and void." (Report 206 [October 1985] describes the Court ruling and the lawsuit against DOE.) Except for an appeal of the ruling, and various public assurances that the issue would be resolved in its favor, DOE took no concrete action immediately following the ruling. Apparently concluding that the most favorable resolution consisted of changing the federal regulations governing enrichment, DOE drafted extensive revisions to the existing criteria, and will submit the proposed criteria for a 45-day Congressional review once the final wording is established. The proposed criteria will become effective if during that time Congress does not object. If the

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changes are accepted, they will be applied retroactively to the USEC, at which point a number of legal complications are certain to arise, including renewed litigation from the US producer group.

Among the proposed changes in the criteria are the following significant points.

1. *Enrichment of Foreign-Origin Uranium.* (§762.3) "Domestic customers must certify the country of origin of feed material delivered to DOE." No restrictions are specified against any particular origin, and non-US customers are not required to certify feed origin, but this requirement will facilitate the monitoring of non-US uranium use.

2. *Prices.* (§762.4) "DOE shall negotiate prices in individual enrichment contracts in accordance with an overall approach intended to maintain the long-term competitive position of DOE while obtaining the recovery of the government's costs over a reasonable period of time." Because neither the phrase "long-term competitive position" nor "a reasonable period of time" is defined, this section could be used by DOE to justify a wide-ranging, subjective price structure which varies from one customer to another and *is not subject to Congressional review.* There is no reference to floor or ceiling prices.

3. *Costs.* (§762.5) "DOE will establish charges for enrichment services on a basis that recovers appropriate government costs over a reasonable period of time. Such costs will be determined on a basis that includes the costs incurred in providing enrichment services to civilian customers ..." DOE apparently seeks to assure its customers that it will not spend more than it earns. Nevertheless, the unspecified time constraint and the term "*appropriate* government costs" allow DOE ample flexibility to act in an unaccountable manner in any particular fiscal year.

4. *Nondiscrimination.* (§762.7) "The same prices, as well as other terms and conditions, shall be available to all similarly situated customers on a nondiscriminatory basis, reflecting the cost of the enrichment services supplied to those customers." The nondiscriminatory claim is effectively nullified by the ambiguity of the phrase "similarly situated," and probably will cause problems for utilities that want to be assured of getting the best possible contract terms. As individual customers claim uniqueness that warrants lower prices and more favorable terms and conditions, this clause will undoubtedly foster controversy over the unequal treatment of different utilities, effectively *inviting* charges of discrimination.

It is not at all certain that the new criteria proposed by DOE will survive the 45-day Congressional review. Various political interest groups could use the opportunity to pressure DOE into certain concessions. One source of opposition probably will be Senator Pete Dominici (R, New Mexico), whose vocal support of the US uranium production industry led him to advocate legislation designed to limit non-US uranium imports. Opposition by the General Accounting Office (GAO) to DOE's accounting practices and the $3.5 billion valuation of the current enrichment facilities could endanger DOE's entire pricing approach. If the facilities were valued higher, repayments to the Treasury would have to be increased or accelerated. Representatives concerned with the fiscal implications of the Gramm-Rudman-Hollings Act, the federal deficit reduction bill, may agree with the GAO opinion that DOE's obligation to recover costs has not been adequately addressed. Finally, opposition may arise from representatives who will try to use the opportunity to attack DOE on issues ranging from the shutdown of enrichment plants, the abandonment of centrifuge enrichment technology, non-proliferation, or sanctions against other nations.

Compounding DOE's problems, a legal opinion issued on February 19, 1986 by the GAO stated, "... whatever the policy merits of (Department of) Energy's proposal, it cannot legally be accomplished through rulemaking." The GAO specifically took issue with three aspects of the proposed criteria:

— The modification that allows DOE flexibility in pricing and other contract terms without congressional oversight;

— the changes that permit individually negotiated contracts rather than standard contracts; and

— the "Nondiscrimination" criteria.

In addition, the opinion expressed doubt that DOE has correctly and sufficiently addressed the problem of the viability of the US uranium industry in its proposed criteria. The GAO recognized some merit in the proposal, but judged that the changes conflict with established law and must be implemented through legislative action.

Conclusions

Despite statements to the contrary, DOE's credibility has increasingly come into question. The US uranium producers' lawsuit was characterized by DOE as being without merit, yet the Court ruled the USEC null and void. DOE resisted the establishment of new enrichment criteria on the theory that such new criteria would constitute an admission that the implementation of the USEC was in fact flawed. The US Court of Appeals in Denver, which is currently reviewing the judgment against DOE, recently denied a motion that would have nullified the original invalidation of the USEC upon acceptance of the new criteria. The GAO in turn found that the new criteria were illegal.

A number of DOE customers, while impressed by its commercial orientation, are dismayed both by the confusion and lack of preparation now evident and have understandably formed the impression that DOE is merely reacting to events beyond its

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control. While the proposed changes to the enrichment criteria would give DOE new flexibility to operate in a competitive market environment, customers have little knowledge as to how this flexibility will be utilized once they have committed 100 percent of requirements to DOE for the next decade. Many of DOE's customers, particularly in the USA, believe that it was only the pressures of secondary market sales, Eurodif, and Urenco that forced DOE to respond with more competitive measures in the first place. Thus, many utilities fear that DOE's reestablishment of a strong competitive position, one in which market forces can no longer exercise disciplinary power over DOE's activities, will allow it to once again control the enrichment market.

Indeed, there are indications that DOE will improve its market position *despite* the recent uncertainties. The two incentive pricing initiatives, the weakening of the US dollar against most European currencies, and the provisions for additional contract flexibility contained in the proposed new criteria all combine to strengthen DOE's position. The range of possible resolutions to the legal and procedural difficulties could be far-reaching.

One extreme scenario involves the Court ruling against DOE on all counts, denying appeals, and immediately barring the enrichment of non-US origin uranium for domestic end use. The results would be chaotic for DOE, and particularly for its domestic customers. The opposite extreme involves the acceptance of the new criteria unchanged; DOE would prevail in the courts and no relief would be granted to US producers concerning the import issue. It is unlikely that either scenario will materialize; rather, the most likely outcome will entail a degree of compromise. Although the eventual resolution is impossible to predict, it is certain to affect both the enrichment and uranium markets worldwide.

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CURRENT MARKET DATA

February 28, 1986	Market Values	Active Supply[1] (thousands)	Active Demand[1] (thousands)
EXCHANGE VALUE	**$17.00**/lb. U_3O_8	2,405	975
UF_6 VALUE	**$48.00**/kgU		
CONVERSION VALUE	**$1.80**/lb. U as UF_6	865	950
SWU VALUE 0.3 tails assay; delivery within one year	**$80**/SWU		
LOAN RATE	5%/annum	0	0

	$/lb. U_3O_8	Millions of Pounds	Number of Transactions	Number of Months
TRANSACTION VALUE	**16.70**	2.6	16	5

[1]Supply and demand tables in *Current Market Data* section of this Report detail the numbers for each category.

DEFINITIONS

1. The **Exchange Value** is Nuexco's judgment of the price at which transactions for significant quantities of natural uranium concentrates could be concluded as of the date indicated.
2. The **UF_6 Value** is Nuexco's judgment of the price at which spot and near-term transactions for significant quantities of natural uranium hexafluoride could be concluded as of the date indicated.
3. The **Conversion Value** is Nuexco's judgment of the price at which spot and near-term transactions for significant quantities of conversion services could be concluded in the secondary market as of the date indicated.
4. The **SWU Value** represents Nuexco's judgment of the price at which transactions for the sale of significant quantities of SWUs of stated origin for delivery in the specified time period could be concluded as of the date indicated.
5. The **Loan Rate** is Nuexco's judgment of the annual interest rate at which uranium loans could be concluded as of the date indicated.
6. The **Transaction Value** is a weighted average price of recent natural uranium sales transactions. The calculation is based on prices paid in:
   a. Transactions closed within the previous three-month period for which delivery is scheduled within one year of the transaction date;
   b. At least ten transactions;
   c. Transactions involving a sum total of at least 2 million pounds U_3O_8 equivalent.

   The sample time is extended as necessary to include these minima. Other currencies are converted to US dollars using conversion rates in effect on or near the transaction date.

DERIVATIONS AND COMMENTS

1. All Market Values are based on:
   a. Data from recently completed transactions.
   b. Data from pending transactions.
   c. Firm bids to buy or borrow, and firm offers to sell or lend.
   d. Prices purchasers or rates borrowers have expressed a willingness to pay, but for which Nuexco is not aware of firm bids to buy or borrow, and prices sellers or rates lenders have expressed a willingness to accept, but for which Nuexco is not aware of firm offers to sell or lend.
2. Prices associated with deliveries under old or renegotiated contracts or other than arm's-length transactions are not included in the determination of these Market Values.
3. In the determination of the Conversion Value, Nuexco does not consider transportation charges other than those customarily provided by primary suppliers of conversion services.
4. The prices of conversion services or SWUs delivered under long-term contracts with primary suppliers are not considered in the determination of either the Conversion Value or SWU Value.
5. For the SWU Value, Nuexco converts SWU prices at varying tails and product assays to equivalent SWU prices at a tails assay of 0.30 weight-percent U_{235} and a product assay of 3.0 weight-percent U_{235}, assuming feed costs corresponding to the Nuexco Exchange and Conversion Values determined as of the same date.
6. In calculating the Transaction Value, Nuexco does not account for the price of uranium delivered in connection with contracts which call for "market price" mechanisms. This exclusion applies particularly to contracts in which delivery prices are expressed as a function of future Exchange Values or any other indeterminate variable. Also excluded from the calculation are any other transactions in which the delivery price is defined in such a way that it cannot currently be determined.

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CURRENT MARKET DATA

EXCHANGE VALUE EXPRESSED IN SELECTED PRODUCER & CONSUMER CURRENCIES[1]

Country (currency)	per lb. U_3O_8 in Concentrates			per kg. U in Concentrates		
	This Month (Feb 28, 1986)	Last Month (Jan 31, 1986)	12 Months Ago (Feb 28, 1985)	This Month (Feb 28, 1986)	Last Month (Jan 31, 1986)	12 Months Ago (Feb 28, 1985)
Australia (dollar)	23.97	23.74	20.76	62.31	61.71	53.97
Belgium (comm. franc)	771.68	828.06	1,001	2,006	2,153	2,602
Canada (dollar)	23.98	.14	20.73	62.35	62.75	53.89
Finland (markka)	86.03	90.62	103.38	223.66	235.59	268.76
France (franc)	116.20	123.82	152.39	302.09	321.90	396.19
FRG (mark)	37.89	40.38	49.85	98.50	104.98	129.60
Italy (lira)	25,668	27,557	30,902	66,731	71,642	80,339
Japan (yen)	3,082	3,275	3,881	8,012	8,514	10,090
Netherlands (guilder)	42.67	45.70	56.24	110.93	118.81	146.22
South Africa (rand)	33.73	38.72	30.00	87.69	100.67	77.99
Spain (peseta)	2,380	2,548	2,745	6,187	6,625	7,137
Sweden (krona)	121.69	127.63	140.71	316.37	331.80	365.82
Switzerland (franc)	32.00	34.29	42.37	83.20	89.14	110.16
UK (pound)	11.58	12.02	13.76	30.11	31.25	35.78
US (dollar)	17.00	17.00	15.00	44.20	44.20	39.00

TRANSACTION VALUE EXPRESSED IN SELECTED PRODUCER & CONSUMER CURRENCIES[1]

Country (currency)	per lb. U_3O_8 in Concentrates			per kg. U in Concentrates		
	This Month (Feb 28, 1986)	Last Month (Jan 31, 1986)	12 Months Ago (Feb 28, 1985)	This Month (Feb 28, 1986)	Last Month (Jan 31, 1986)	12 Months Ago (Feb 28, 1985)
Australia (dollar)	23.54	23.11	21.73	61.21	60.08	56.49
Belgium (comm. franc)	758.06	806.14	1,047	1,971	2,096	2,723
Canada (dollar)	23.56	23.50	21.70	61.25	61.09	56.41
Finland (markka)	84.51	88.22	108.20	219.72	229.35	281.30
France (franc)	114.15	120.54	159.50	296.76	313.37	414.68
FRG (mark)	37.22	39.31	52.18	96.76	102.20	135.65
Italy (lira)	25,215	26,828	32,344	65,554	69,746	84,088
Japan (yen)	3,028	3,188	4,062	7,871	8,289	10,561
Netherlands (guilder)	41.92	44.49	58.87	108.98	115.66	153.04
South Africa (rand)	33.13	37.70	31.40	86.14	98.01	81.63
Spain (peseta)	2,338	2,481	2,873	6,078	6,450	7,470
Sweden (krona)	119.54	124.25	147.28	310.78	323.02	382.89
Switzerland (franc)	31.44	33.38	44.35	81.73	86.78	115.30
UK (pound)	11.38	11.70	14.40	29.58	30.42	37.45
US (dollar)	16.70	16.55	15.70	43.42	43.03	40.82

[1]Calculated using currency exchange rates published in the *Wall Street Journal* on February 28, 1986.

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CONVERSION VALUE EXPRESSED IN SELECTED PRODUCER & CONSUMER CURRENCIES[1]

Country (currency)	per lb. U as UF6			per kg. U as UF6		
	This Month (Feb 28, 1986)	Last Month (Jan 31, 1986)	12 Months Ago (Feb 28, 1985)	This Month (Feb 28, 1986)	Last Month (Jan 31, 1986)	12 Months Ago (Feb 28, 1985)
Australia (dollar)	2.54	2.23	1.38	5.59	4.93	3.05
Belgium (comm. franc)	81.71	77.93	66.71	180.13	171.82	147.07
Canada (dollar)	2.54	2.27	1.38	5.60	5.01	3.05
Finland (markka)	9.11	8.53	6.89	20.08	18.80	15.19
France (franc)	12.30	11.65	10.16	27.12	25.69	22.40
FRG (mark)	4.01	3.80	3.32	8.84	8.38	7.33
Italy (lira)	2,718	2,594	2,060	5,992	5,718	4,542
Japan (yen)	326.32	308.23	258.73	719.42	679.52	570.41
Netherlands (guilder)	4.52	4.30	3.75	9.96	9.48	8.27
South Africa (rand)	3.57	3.64	2.00	7.87	8.04	4.41
Spain (peseta)	252.00	239.84	183.02	555.55	528.77	403.48
Sweden (krona)	12.88	12.01	9.38	28.41	26.48	20.68
Switzerland (franc)	3.39	3.23	2.82	7.47	7.11	6.23
UK (pound)	1.23	1.13	0.92	2.70	2.49	2.02
US (dollar)	1.80	1.60	1.00	3.97	3.53	2.20

SWU VALUE AND UF6 VALUE EXPRESSED IN SELECTED PRODUCER & CONSUMER CURRENCIES[1]

Country (currency)	SWU Value delivery within one year (February 28, 1986)	UF6 Value per kg.U in UF6 This Month (February 28, 1986)	UF6 Value per kg.U in UF6 Last Month (January 31, 1986)
Australia (dollar)	112.79	67.67	65.62
Belgium (comm. franc)	3,631	2,179	2,289
Canada (dollar)	112.87	67.72	66.73
Finland (markka)	404.86	242.91	250.53
France (franc)	546.82	328.09	342.32
FRG (mark)	178.29	106.98	111.64
Italy (lira)	120,791	72,475	76,187
Japan (yen)	14,503	8,702	9,054
Netherlands (guilder)	200.80	120.48	126.34
South Africa (rand)	158.73	95.24	107.06
Spain (peseta)	11,200	6,720	7,045
Sweden (krona)	572.66	343.59	352.85
Switzerland (franc)	150.60	90.36	94.80
UK (pound)	54.50	32.70	33.23
US (dollar)	80.00	48.00	47.00

[1]Calculated using currency exchange rates published in the *Wall Street Journal* on February 28, 1986.

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CURRENT MARKET DATA

RECENT TRANSACTIONS[1]

Uranium Sales

Nuexco Transaction Number	Delivery Period	Approximate Quantity (thousands of pounds, U_3O_8 equivalent)	Approximate Price as Percent of Current Exchange or UF_6 Value	Seller	Buyer	Remarks
3685	1986	50-100	102	Trader	Non-US Utility	UF_6. Part of tails assay swap.
3684A	1986	301-600	R[5]	European Utility	European Utility	Contained in LEU.
3683	1987	101-300	103	R[5]	European Utility	
3681	1986	less than 50	101	US Producer	Trader	
3654	1986	101-300	see remarks	R[5]	US Utility	Market related price. – Transaction occurred in late 1985.

Enrichment Services
Secondary Market Sales

Nuexco Transaction Number	Delivery Period	Approximate Quantity[2] (thousands of SWUs)	Approximate Price[3] as Percent of Current SWU Value[4]	Seller	Buyer	SWU Origin	Remarks
3688	1986	less than 50	113	US Utility	US Fabricator	DOE	
3687	1986	less than 50	R[5]	US Utility	US Utility	DOE	
3686	1986	less than 50	99	Non-US Utility	Non-US Utility	DOE	Tails assay swap.
3684B	1986	101-300	R[5]	European Utility	European Utility	R[5]	Contained in LEU.

[1]Transactions listed are not limited to those in which Nuexco was involved, but also include others of which Nuexco is aware.
[2]If tails assay is unknown or unspecified, Nuexco's calculation of SWU quantity assumes 0.20 w/o tails assay.
[3]Price is not normalized to 0.20% tails assay.
[4]Refers to SWU Value that corresponds to SWUs included in transaction. When prices and SWU values are expressed as discounts (e.g. X dollars less than DOE's USEC base price at time of delivery), the percentage refers to the ratio of the *discounts*, not the ratio of the prices.
[5]The notation *R* means that Nuexco either does not know, or that Nuexco has restricted that information to protect client confidentiality.

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URANIUM SUPPLY
(February 28, 1986)

Nuexco Project Number	Delivery Period[1] (Thousands of Pounds U_3O_8) Spot or Near-term[2]	Intermediate or Long-term	Remarks
Available for Sale:			
ACTIVE			
2335	300	—	
2728	350	—	
2740	175	—	
2793*	500	—	
2802*	200	—	UF_6
2838*	130	—	UF_6
3023	750	500	UF_6
2263		400 per year	1987 on
2625	—	500 per year	1987 on
2778	—	220 per year	1987-90
2781	—	100 per year	1988-95
TOTAL	2,405		
INACTIVE			
2336	250	250 per year	1986-94
2389	75	75 per year	1986-90
2764	260	—	UF_6
2765	260	—	UF_6
2777	250	—	
2851*	125	—	
2297	—	200 per year	1986-89
TOTAL:	1,220		

*New or revised since last month.

[1]Measured from the date of this Report.

[2]For delivery within one year. This category excludes material deliverable within one year under other than spot or near-term contracts.

Projects removed since last month: 2654, 2680, 2818.

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CURRENT MARKET DATA

URANIUM DEMAND
(February 28, 1986)

Nuexco Project Number	Delivery Period[1] (Thousands of Pounds U_3O_8) Spot or Near-term[2]	Intermediate or long-term	Remarks
Inquiries to Purchase:			
ACTIVE			
2786	60	—	
2811*	65	—	UF_6
2820*	200	—	UF_6
2888	650	—	
2217	—	1,000 per year	1989-95
2507	—	600	1987-89
2586	—	250 per year	1988-95
2681	—	500 per year	UF_6 or U_3O_8; 1987-88
2738	—	1,000	1989 on
2739	—	1,000 per year	1987-90
2760	—	750 per year	1986-90
2770	—	500 per year	1988-94
2782	—	800	1987-88
2808	—	300	1987 on
2821	—	120 per year	1988-93
2850	—	300 per year	1990-95
2870	—	100	1989
TOTAL:	975		
INACTIVE			
2548	290	—	
2733*	500	500 per year	1987-95
2743*	600	—	UF_6
2784	100	—	
2798	70	—	
2806	1,000	—	
TOTAL:	2,560		

*New or revised since last month.
[1]Measured from the date of this Report.
[2]For delivery within one year. This category excludes material deliverable within one year under other than spot or near-term contracts.
Projects removed since last month: 2758.

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LOAN SUPPLY AND DEMAND
(February 28, 1986)

Nuexco Project Number	Delivery Period[1] (Thousands of Pounds U_3O_8) Within 1 Year	Beyond 1 Year	Remarks
Available for Loan:			
INACTIVE			
1938	2,000	—	UF_6
2036	500	—	
2667	800	—	
2805	2,000	—	
TOTAL:	5,300		

*New or revised since last month.
[1]Measured from the date of this Report.
Projects removed since last month: None.

No inquiries to borrow are reported this month.

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CURRENT MARKET DATA

CONVERSION SUPPLY AND DEMAND
(February 28, 1986)

Nuexco Project Number	Delivery Period[1] (Thousands of Pounds U as UF_6) Within 3 Years	Beyond 3 Years	Remarks
Available for Sale:			
ACTIVE			
2717*	290	—	
2849	300	900	1986-90
2874	275	—	
TOTAL:	865		
Inquiries to Purchase:			
ACTIVE			
2833*	400	—	
2865*	450	—	
TOTAL:	950		
INACTIVE			
2864*	330	—	
2882	—	1,000	1987
TOTAL:	330		

*New or revised since last month.
[1]Measured from the date of this Report.
Projects removed since last month: 2724.

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SWU SUPPLY AND DEMAND
(February 28, 1986)

Nuexco Project Number	Delivery Period[1] (Thousands of SWUs) Spot or Near-term[2]	Intermediate or Long-term	Remarks
Available for Sale:			
ACTIVE			
2571	—	55	1987
2873	40	—	
2889	25	—	
TOTAL:	65		
INACTIVE			
2410A	340	—	
2914*	50	—	
TOTAL:	390		
Inquiries to Purchase:			
ACTIVE			
2811*	10	—	
3024*	10	—	
TOTAL:	20		

*New or revised since last month.
[1]Measured from the date of this Report.
[2]For delivery within one year. This category excludes SWUs deliverable within one year under other than spot or near-term contracts.
Projects removed since last month: 2705, 2761, 2797.

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US NUCLEAR POWER PLANT BACKLOG

Construction Progress

Despite the slow construction progress of nuclear plants in the USA (surpassed by almost every nation having a substantial nuclear construction program), one promising development emerged in 1985. The rash of cancellations of partially constructed units over the past decade appears to have waned; no units were canceled in 1985, the first time that has happened since 1973. Thirty-four units comprise the nuclear plant construction backlog in the USA as of February 1986. A unit enters the backlog when construction starts and exits when commercial operation begins. Table 1 lists the units currently under construction and on order, in descending order of construction completion percentage, including units for which the expected date of commercial operation is indefinite. The units represent a total capacity of approximately 38,000 MWe. Recent trends indicate that most of the units currently under construction could be operable by 1990.

Table 1 lists the completion percentage for each unit in January 1984 and in January 1986, and uses that percentage change as a measure of progress. Table 2 then shows a breakdown of the construction progress for all of the units, placing them into a series of ten-percent ranges. Only seven of the units in the backlog exhibited more than 20 percent progress in the two-year span; even more discouraging are the many units measuring less than five percent or negative progress over the two years. Part of this problem can be attributed to lengthy licensing procedures as a unit approaches commercial operation, but the uncertain financial situations of some nuclear utilities probably accounts for most of the stagnation.

Table 2

CONSTRUCTION PROGRESS ON US BACKLOG BETWEEN JAN. 1984 AND JAN. 1986 (As measured by changes in completion percentages)

Change in Completion Percentage[1]	Number of Units[2]
40-49	1
30-39	3
20-29	3
10-19	11
0-9	14
negative	2
TOTAL	34

[1] As listed in Table 1 of this article.
[2] Excludes two units (Commonwealth Edison's Carroll County Units 1 and 2) which are on order.

Outlook for Near-Term Growth

Table 3 presents a breakdown of the units under construction according to completion percentage. The table illustrates that over half of the units on backlog (representing almost 20,000 MWe) are at least 90-percent complete, an encouraging sign for growth in installed nuclear capacity over the next several years. Eight of those units are 100-percent complete and are licensed for various stages of power ascension. A notable example is Arizona Public Service Company's Palo Verde plant. Unit 1 began commercial operation in February 1986, and Unit 2 has been licensed to load fuel. The utility expects that unit to enter commercial operation later in 1986, with Unit 3 signalling the plant's completion in mid-1987.

Table 3

COMPLETION PERCENTAGES OF UNITS IN US BACKLOG

Percent Complete[1]	Number of Units[2]
90-100	18
80-89	5
70-79	2
60-69	2
50-59	4
40-49	0
30-39	2
20-29	1
10-19	0
0-9	0
TOTAL	34

[1] As listed in Table 1 of this article.
[2] Excludes two units which are on order.

Other units approaching completion, such as Long Island Lighting Company's (LILCO) Shoreham plant, may be further from actual commercial operation than indicated by their construction completion percentage. The Shoreham unit remains entangled in various legal proceedings associated primarily with the issue of emergency evacuation plans. Because of the unknown length of the current proceedings, it is difficult to

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Table 1

US NUCLEAR POWER PLANT BACKLOG[1]

Unit	Lead Utility	MWe (net)	Completion Percentage Jan. 1984[2]	Completion Percentage Jan. 1986[3]	Change in Completion Percentage
Under Construction					
Fermi 2	Detroit Edison	1100	98	100	2
Diablo Canyon 2	Pacific G&E	1106	95	100	5
River Bend 1	Gulf States Util.	940	82	100	18
Palo Verde 2	Arizona PS	1270	99	100	1
Perry 1	Cleveland Elec.	1205	90	100	10
Hope Creek 1	Public Service E&G	1070	81	100	19
Catawba 2	Duke Power Co.	1145	62	100	38
Shoreham*	LILCO	809	99	100	1
Millstone 3	Northeast Utilities	1150	81	99	18
Comanche Peak 1	Texas Utilities	1150	97	99	2
Watts Bar 1	Tennessee Valley Auth.	1177	96	99	3
Palo Verde 3	Arizona PS	1270	83	99	16
Clinton 1	Illinois Power Co.	933	82	98	16
Nine Mile Pt. 2	Niagara Mohawk	1085	78	95	17
Seabrook 1	Yankee (New Hampshire)	1150	89	95	6
Shearon Harris	Carolina Power & Light	900	85	94	9
Beaver Valley 2	Duquesne Light Co.	833	78	90	12
Braidwood 1	Commonwealth Edison	1120	70	90	20
Vogtle 1	Georgia Power Co.	1100	61	89	28
Watts Bar 2	Tennessee Valley Auth.	1177	61	85	24
South Texas 1	Houston Light & Power	1250	50	83	33
Bellefonte 1	Tennessee Valley Auth.	1213	76	83	7
Byron 2	Commonwealth Edison	1120	67	82	15
Comanche Peak 2	Texas Utilities	1150	65	78	13
WPN-3*	Washington PPSS	1240	75	75	0
South Texas 2	Houston Light & Power	1250	25	65	40
WPN-1*	Washington PPSS	1240	63	63	0
Braidwood 2	Commonwealth Edison	1120	54	59	5
Perry 2*	Cleveland Electric	1205	42	57	15
Bellefonte 2	Tennessee Valley Auth.	1213	57	54	−3
Vogtle 2	Georgia Power Co.	1100	20	53	33
Grand Gulf 2*	Mississippi P&L	1250	33	33	0
Limerick 2	Philadelphia Electric	1055	30	31	1
Seabrook 2*	Yankee (New Hampshire)	1150	29	23	−6
TOTAL		38,246			12[4]
On Order					
Carroll County 1	Commonwealth Edison	1120	0	0	—
Carroll County 2	Commonwealth Edison	1120	0	0	—

*Commercial operation date is indefinite.

[1]Excludes two units (Limerick Unit 1 and Palo Verde Unit 1) which began commercial operation in early 1986.

[2]As listed in *Nuclear News* "World List of Nuclear Power Plants" of December 31, 1983, and other publications.

[3]As listed in *Nuclear News* "World List of Nuclear Power Plants" of December 31, 1985, and other publications.

[4]Indicates a megawatt-weighted average, i.e. the average change in completion percentage for units under construction during the two-year period from January 1984 to January 1986, incorporating an adjustment for differences in the size of those units.

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predict the unit's eventual operation date. In general, the likelihood of unanticipated problems and slow licensing procedures for many of the twenty-odd units nearest to operation will prevent a rapid increase in capacity in 1986. Nuexco projects that 7 of the 18 units scheduled to enter commercial operation in 1986 will actually do so. Moreover, Duke Power Company's Catawba Unit 2, which had been scheduled for operation in June 1987, has just completed fuel loading and probably will enter commercial operation in the fourth quarter of 1986.

Table 3 also demonstrates that the surge of reactor programs initiated in the mid-1970s is reaching its final stage. Commercial operation is uncertain for many of the units which are less than 70-percent complete. The Seabrook and Grand Gulf plants are typical examples; in each case, the financial burden associated with construction of the first unit has drastically reduced the chances of obtaining financing to finish the second unit. The progress on Seabrook Unit 2 and Grand Gulf Unit 2 was zero or less during the two-year span.

Table 4 summarizes nuclear construction programs in the USA. Overall, while the average percentage progress made on backlog (measured against other nations) probably will not improve significantly, the steady progress utilities have made in bringing reactors to commercial operation over the last two years is likely to continue through 1986.

Table 4

US UTILITIES' NUCLEAR POWER PLANT CONSTRUCTION PROGRAMS

Units Under Construction	MWe Under Construction	Average MWe per Unit	Average Progress on Backlog[1]	Units On Order
34	38,246	1,125	12%	2

[1] Average progress on backlog measures the average change in completion percentage for units under construction during the two-year period from January 1984 to January 1986, incorporating a MWe-weighted adjustment for differences in the size of those units. The calculation excludes units on order and units that began commercial operation during that period.

AMPLIFICATIONS

Two typographical errors in the last two Reports warrant correction.

1. In Report 209 (January 1986), an article in the *PRICING* section discussed the recent DOE Incentive Pricing proposal for fiscal years 1991-1995. In it, the price per SWU under the offer was described as:

> "...the lower of the USEC price or the price determined by the following formula:
>
> $$\text{Price} = \$85 = \frac{(85)(\text{Im} - \text{I})}{\text{I}}, \text{ where}$$
>
> Im = Implicit Price Deflator for the US GNP (Gross National Product) at the end of the second quarter of the calendar year preceding the fiscal year of delivery.
> I = 230.55, which is the Implicit Price Deflator for US GNP for the second quarter 1985."

The equation as written produces only the fraction that should be *added* to \$85 to determine the actual price; that fraction is *not* equal to \$85. Therefore, the following equation can be used to determine the price by adding the fraction to \$85:

$$\text{Price} = \$85 + \frac{(85)(\text{Im} - \text{I})}{\text{I}}$$

This can also be written:

$$\text{Price} = \$85 \times \left(1 + \frac{\text{Im} - \text{I}}{\text{I}}\right)$$

2. In Report 210 (February 1986), the article on the non-US nuclear plant backlog included an incorrect figure for the construction completion percentage of the Brokdorf unit in the Federal Republic of Germany, which was listed as only 15 percent complete as of January 1986. In actuality, the unit is 100-percent complete and is undergoing testing. The unit's lead utility and fuel buyer, Preussenelektra AG, expects the Kraftwerk Union PWR to enter commercial operation in August 1986.

3. Also in Report 210, in the article on 1985 US Uranium Activities, a reference to the April 1985 Nuexco Exchange Value stated that \$14.25 was the lowest figure recorded in Exchange Value history. In actuality, it was the lowest figure *in over a decade*, but the all-time low was \$5.95, which was in effect from mid-1971 through early 1973.

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WORLD URANIUM RESOURCES

Summary

Nuexco's estimate of the WOCA[1] uranium *resources* (recoverable at costs up to $50 per pound U_3O_8) is presented in Table 5. Defining "reserves" as reasonably assured resources (RAR[2]) recoverable at a cost of less than US$30 per pound U_3O_8 (RAR30), Nuexco estimates that the world's *reserves* amount to almost 2,000,000 short tons U_3O_8 (4,000,000,000 pounds U_3O_8). That amount, according to current estimates of reactor demand and without making any allowance for future uranium discoveries, would be sufficient to supply the world's requirements for at least the next 30 years.

Broadening the definition of reserves to include resources recoverable at less than US$50 per pound U_3O_8 would increase the total by approximately 40 percent, to 2,800,000 short tons U_3O_8 (5,600,000,000 pounds U_3O_8). That amount would supply world consumption for another 15 years, totaling 40 to 50 years forward supply based on current estimates without allowance for future discoveries. These resource totals include conventional deposits plus South African by-product mines. The world's estimated uranium resource endowment can be further increased by the inclusion of resources associated with unconventional sources, such as the following:

1. Heap leaching;
2. In-situ leaching;
3. By-product recovery from phosphoric acid;
4. Processing of slimes in South Africa;
5. Laser enrichment of enrichment plant tails.

Table 5

WORLD URANIUM RESOURCE ESTIMATE — REASONABLY ASSURED RESOURCES[1,2]
as of January 1, 1986
(Thousands of Short Tons U_3O_8)

	Recoverable at Cost of		
Region	Less Than US$30/lb. U_3O_8	US$30 to US$50/lb. U_3O_8	Less Than US$50/lb. U_3O_8
Argentina	23.6	5.8	29.4
Australia	592.0	82.0	674.0
Brazil	210.8	—	210.8
Canada	186.5	77.0	263.5
France	60.7	14.7	75.4
Gabon	12.4	6.0	18.4
India	41.2	14.3	55.5
Namibia	145.0	20.8	165.8
Niger	192.4	—	192.4
South Africa	221.0	158.6	379.6
Spain	19.8	6.0	25.8
United States	174.5	373.5	548.0
Other Countries	60.0	82.0	142.0
TOTAL	1,939 9	840.7	2,780.6

[1] Data from public sources, as modified by Nuexco to account for changes that have taken place since official estimates were released. Estimates for CMEA (Centrally-Planned Economic Areas) countries not included.

[2] Reasonably Assured Resources (RAR) refers to uranium that occurs in known mineral deposits of such size, grade and configuration that it could be recovered within the given production cost ranges with currently proven mining and processing technology. Estimates of tonnage and grade are based on specific sample data and measurements of the deposits and on knowledge of deposit characteristics. Reasonably Assured Resources having a high assurance of existence and in the cost category below $30/lb. U_3O_8 are considered as reserves for the purposes of this table.

Methodology

The Nuexco estimate of RAR is based on the definitions accepted by the International Atomic Energy Agency (IAEA) and the Organization for Economic Cooperation and Development (OECD). In short, RAR includes: "uranium that occurs in known mineral deposits of such size, grade and configuration that it could be recovered within a production cost range of less than US$30 per pound U_3O_8, with currently proven mining and processing technology."

The IAEA/OECD further defines RAR as having a high assurance of existence within the specified cost range. RAR classified in this manner are considered ore reserves, which is consistent with the USDOE classification for ore reserves. The cost ranges used herein are forward production costs (except as specified otherwise), defined both by IAEA/OECD and by USDOE as:

> "all capital and operating expenditures incurred after the date of the ore reserve estimate. Sunk costs are not included."

[1] WOCA = World Outside Centrally-planned economic Areas.

[2] Reasonably Assured Resources (RAR) refers to uranium that occurs in known mineral deposits of such size, grade and configuration that it could be recovered within the given production cost ranges with currently proven mining and processing technology. Estimates of tonnage and grade are based on specific sample data and measurements of the deposits and on knowledge of deposit characteristics. Reasonably Assured Resources having a high assurance of existence and in the cost category below $30/lb. U_3O_8 are considered as reserves.

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Discussion

A large portion of the total uranium resource base was discovered during the 1970s and early 1980s, when increasing uranium demand seemed assured by the prevailing projections of nuclear power growth. This situation resulted in a vast increase in resource discoveries and the overdevelopment of supply capabilities. As the price of uranium concentrates increased, so did resource figures; lower-grade material was assigned to higher-cost and more speculative occurrence categories. Because uranium demand projections have diminished and supply has increased, uranium resources other than those in the RAR30 category should no longer be counted among the world's current reserves. Due to continual changes in industry economics, there are *some* portions of existing RAR30 that have yet to be reclassified into a higher cost category. This assessment includes all resources recoverable at costs up to $50 per pound U_3O_8 (RAR50), because Nuexco price forecasts indicate that resources in the RAR50 category will be relevant to uranium supply over the very long term (40 to 50 years). Beyond that period, new discoveries and changing economics will be important factors in establishing resource availability. The OECD/IAEA classification of Estimated Additional Resources (EAR) Categories 1 and 2 could potentially satisfy the longer-term requirement.

Because Estimated Additional Resources — Category 1[3] (EAR -1) consists of resources that have been discovered but not fully delineated, there is significantly less emphasis on resource validity, regardless of the close geologic association with RAR. EAR-2 consists of resources that potentially exist in association of known deposits and mineral trends, but have not yet been discovered. The potential status of EAR-1 for WOCA countries is shown in Table 6. EAR-1 resources add approximately 40 to 50 years to WOCA uranium supplies.

The RAR estimates listed for Australia, Canada, France, Gabon, Namibia, Niger, South Africa and the United States are the most valid, based upon historical exploration and mining data. Although some reclassification may become necessary to properly reflect changes in cost structures, there will be no attempt herein to reclassify resources. Officially, that will be done by each country over time according to applied technical interpretation of resources within each country. The potential variance attributable to this factor is less than five percent of the total.

Australia

The source for the official estimate for Australia was "*Uranium Mining — The Australian Environment*," by P.J. Bradfield, AIF Symposium, Santa Fe, New Mexico, October 1,

Table 6

WORLD ESTIMATED ADDITIONAL RESOURCES — CATEGORY 1[1]
as of January 1, 1986
(Thousands of Short Tons U_3O_8)

	Recoverable at Cost of		
Region	Less Than US$30/lb. U_3O_8	US$30 to US$50/lb. U_3O_8	Less Than US$50/lb. U_3O_8
Australia	338.0	152.0	490.0
Brazil	120.0	—	120.0
Canada	136.5	119.6	256.1
France	34.5	8.2	42.7
India	6.2	19.0	25.2
Namibia	39.0	29.8	68.8
Niger	313.5	71.5	385.0
South Africa	128.7	54.6	183.3
United States[3]	659.0	503.0	1,162.0
Other Countries	35.0	144.0	179.0
TOTAL	1,810.4	1,101.7	2,912.1

[1] Data from public sources, as modified by Nuexco to account for changes that have taken place since official estimates were released. Estimates for CMEA (Centrally-Planned Economic Areas) countries not included.

[2] Estimated Additional Resources — Category 1 (EAR-1) refers to uranium in addition to RAR that is expected to occur, mostly on the basis of direct geological evidence in extensions of well-explored deposits and in deposits in which geological continuity has been established but where specific data and measurements of the deposits and knowledge of the deposits' characteristics are considered to be inadequate to classify the resource as RAR. Such deposits can be delineated and the uranium subsequently recovered, all within the given cost ranges. Estimates of tonnage and grade are based on such sampling as is available and on knowledge of the deposit characteristics as determined in the best-known parts of the deposit or in similar deposits. Less reliance can be placed on estimates in this category than on those for RAR.

[3] According to IAEA classification, these reserves exist as Category 2 reserves. The US EIA does not differentiate between Categories 1 and 2.

[3] Estimated Additional Resources — category 1 (EAR-1) refers to uranium in addition to RAR that is expected to occur, mostly on the basis of direct geological evidence in extensions of well-explored deposits and in deposits in which geological continuity has been established, but where specific data and measurements of the deposits and knowledge of the deposits' characteristics are considered to be inadequate to classify the resource as RAR. Such deposits can be delineated and the uranium subsequently recovered, all within the given cost ranges. Estimates of tonnage and grade are based on such sampling as is available and on knowledge of the deposit characteristics as determined in the best-known parts of the deposit or in similar deposits. Less reliance can be placed on the estimates in this category than on those for RAR.

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1985. From those figures Nuexco subtracted 10,000 tons to account for 1984 and 1985 production.

Australian resources, primarily in the $30 per pound category, are suspect because of various factors.

1. The presence of a limited industrial-support base;
2. A lack of product markets;
3. Complicated political and environmental constraints, and;
4. The favored deposits contain relatively low-grade uranium.

One exception may be the future production from the Olympic Dam project, where uranium recovery will be secondary to that of copper and gold. The total property resources are estimated at 468,000 tons U_3O_8; approximately 156,000 tons are included as RAR30. The remaining 312,000 tons are primarily distributed between RAR50 and EAR-1 cost categories.

Canada

The official resource estimate for Canada originated from "*Uranium in Canada: 1984 Assessment of Supply and Requirements*," Energy Mines and Resources Canada, September 1985. Nuexco reduced that amount by subtracting actual 1984 production, and 15,000 tons for estimated 1985 production.

Energy, Mines and Resources Canada (EMR) is the organization responsible for uranium resource appraisal. It reports uranium resources as the quantity of uranium recoverable from minable ore; thus, not all uranium associated with a particular deposit will necessarily be included in the RAR category. The present RAR total is based on this concept for all applicable resources known in Canada.

The vast majority of RAR resources are located in the northern Saskatchewan and Elliot Lake districts. Exploration success in northern Saskatchewan continues, suggesting that RAR will be increased further. In fact, the discovery rate for the area has far exceeded total production and reclassification by the EMR over the past few years.

The EAR30 estimate decreased sharply to 136,500 tons U_3O_8 from the 1983 estimate of 235,300 tons. New exploration information, based largely on the continuing evaluation of the Cigar Lake deposit, resulted in the reclassification of resources into the RAR30 and RAR50 categories. Also there was a decrease of about 36,000 tons U_3O_8 in resources assigned to the EAR-1 cost category. Additional changes in resource status will probably occur as the evaluation of Cigar Lake and other new discoveries continues.

South Africa

NUCOR (Nuclear Development Corporation of South Africa [Pty] Ltd.) in 1984 released an updated official assessment of South Africa's uranium resources and production capabilities. Although the release of such information is closely controlled in South Africa under the National Energy Act, the report contains some of the most comprehensive information ever published on the subject. Included were the latest official assessments of trends in uranium exploration, production and prices, as well as discussions of geology and national policy matters.

NUCOR periodically reassesses South Africa's uranium resource and production capabilities. It also expresses the total recoverable resources and their associated costs in terms of RAR and EAR. Nuexco used the NUCOR estimate (*Uranium in South Africa*, "1983 Assessment of Resources and Production," page 11, Nuclear Development Corporation of South Africa [Pty] Ltd.) and then adjusted the official figures to reflect actual production.

The quartz-pebble conglomerates in the Witwatersrand district are the main source of RAR in South Africa. The RAR total is geologically and technically tied to gold resources. Approximately 97 percent of South African uranium is produced at costs below $30 per pound as a by-product of gold production. The Palabora project produces the remaining 3 to 4 percent as a by-product of copper mining.

The recovery of uranium in South Africa is adapted to low grade, high volume operations which require efficient, low-cost control. Nuexco's estimate of production costs allocated to uranium is well below $30 per pound U_3O_8, both for newly mined ore and the recovery from tailings. It appears that the association of South African RAR with gold will cause total availability to remain high and will enable South Africa to sustain its historical market share of 14 to 16 percent.

The uranium resource base in South Africa is likely to remain consistent with the figures outlined in Tables 5 and 6. The only changes should be a slow depletion of reserves due to ongoing production. However, some reclassification of reserves from RAR30 to RAR50 or EAR-1 is possible, should decreasing gold prices or increasing production costs alter current gold production schedules. The recent devaluation of the rand could also trigger changes in gold production schedules. Nevertheless, the overall effect on uranium production costs would be minimal. Any changes applied to resources outside the Witwatersrand quartz-pebble conglomerates would have little impact on the overall resource status of South Africa.

United States

The source of the official estimate of US resources was "Uranium Industry Annual 1984," DOE/EIA—0478(84), page 36. Nuexco subtracted 5,000 tons as a 1985 production estimate. These figures do not include 54 million pounds of $30-per-pound reserves potentially available as by-product from the

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production of phosphates and leaching of copper dumps.

The USA can no longer be considered a major uranium resource country under existing conditions. The largest portion of RAR in the United States falls in the upper level of the $50 cost category, due to remaining resources that are essentially low-grade and costly to extract on a per-pound basis. Moreover, the Energy Information Administration (EIA) has established domestic economic reserves as that portion of RAR which includes all conventional and solution-minable uranium ore recoverable at or below specified production costs. EIA defines this as uranium that is recoverable at costs equal to or below the current market price (or existing contract price). Economic reserves are listed by the EIA at 100,000 tons U_3O_8. According to the EIA, the economic reserves are associated with projects now operating, in the planning stage, or on standby. Of the total economic reserves, 43 percent are located in New Mexico, 33 percent are in Texas and Wyoming, and the remaining 24 percent occur throughout the other districts.

A large part of RAR situated at the upper level of the $50 cost category might not to be recoverable at almost any cost. Of the 373,500 tons listed in that range, approximately 70 to 80 percent are located on properties that are either permanently or temporarily shut down. Conditions that lead to suspended operations continue to exist, and the probability of many of these properties ever reopening becomes more remote with time. Most of the US RAR in the $30 to $50 range will eventually be reclassified into an even higher cost category. It is likely that a portion of the RAR in the $30 or less cost category will be recovered, especially the higher grade reserves in New Mexico and northern Arizona, but the remaining portion might not be mined at all.

Reclassification of uranium resources began about 1980, the result of sharp decreases in the market price for uranium concentrates and escalating production costs. Many mine and mill closures followed, and the US uranium resource base began shifting to higher cost categories. In 1983, the EIA instituted new uranium resource classification categories in order to better approximate the IAEA classifications. Resources previously listed as "reserves" became *Reasonably Assured Resources*. Resources previously listed as "probable potential" were now listed as *Estimated Additional Resources*. However, Categories 1 and 2 of EAR were not recognized by the EIA because of its lack of confidence in the current resources reporting and tabulation system. Instead, US EAR merely represents resources potentially available within a $50 per pound cost range. Because of this distinction, the OECD/IAEA has included all US EAR into its EAR-2 category. Accordingly, the US EAR50 total approximately 1,162,000 tons U_3O_8 (Table 6), all of which OECD/IAEA lists as EAR-2. Thus, the US EAR account for almost 80 percent of EAR-2 resources among WOCA nations.[4] Most of the EAR occur in close relationship with the RAR located in New Mexico, Wyoming, Utah and Colorado.

Argentina, Brazil, Gabon, India, Namibia, Niger, and Spain

Nuexco used official estimates from "*Uranium Resources, Production and Demand*," a joint report by OECD Nuclear Energy Agency and the International Atomic Energy Agency, December 1983, page 19. Nuexco subtracted production for 1983, 1984, and 1985.

Other Countries

Other countries include Algeria, Italy, Japan, Mexico, Portugal, Sweden and Zaire. Official resource estimates were obtained from the aforementioned OECD/IAEA report and were reduced by a total of 5,000 tons U_3O_8, representing combined production for 1983 through 1985. (Source for that production estimate was "United States Uranium Mining and Milling Industry," May 1984, DOE/S-0028, page 32.)

RAR listed for other countries are unreliable as valid uranium resources. Most occurrences are captive to domestic nuclear programs that have been abandoned or stalled indefinitely, and the need for uranium has passed. The deposits are small and low grade; in many cases, mining recovery has never been attempted. For this group, most RAR should be included in the upper part of the $50 cost category or reclassified into a higher cost category. However, the total for this category represents only slightly more than one year's consumption at current rates. Therefore, this category can be ignored without affecting the results of the analysis.

In most other countries, the reclassification of resources has had a negligible effect on WOCA totals. However, reclassification in France and Niger have significantly increased WOCA resource totals. The exploration effort within France is perhaps the most aggressive throughout WOCA nations. As a result of further evaluation of new discoveries, approximately 2,000 tons U_3O_8 have been added to RAR50, and about 12,000 tons have been added to EAR-1. In Niger, the continued reclassification has resulted in the addition of 41,000 tons U_3O_8 to RAR 50, and the addition of 244,000 tons U_3O_8 to EAR30.

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[4] "Nuclear Fuel Cycle Supply Capabilities — The Front End", by R.M. Williams of Energy, Mines and Resources Canada. Presented at the OECD/IAEA Conference in Paris, France, November 5-7, 1985.

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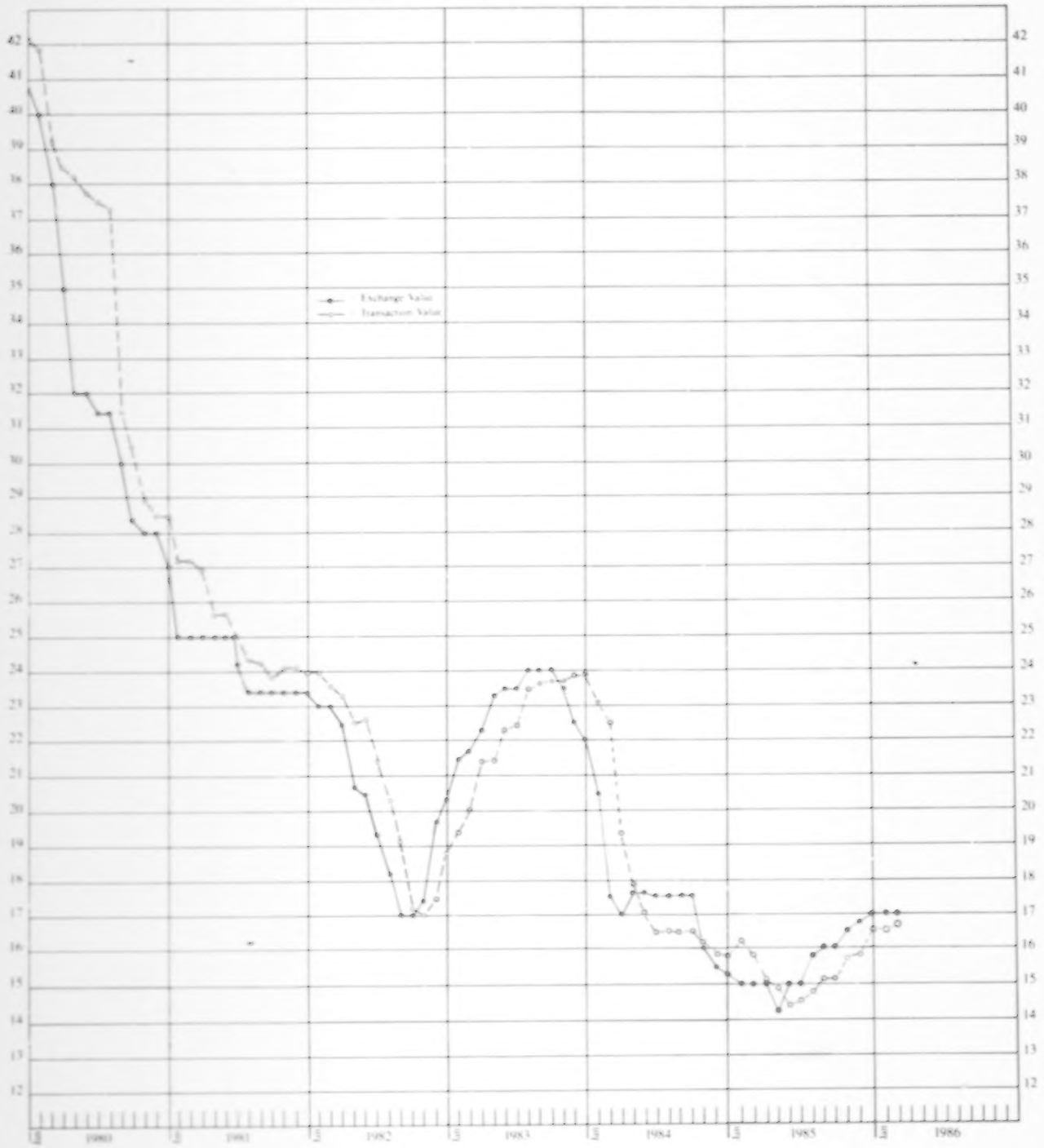
EXCHANGE AND TRANSACTION VALUES SINCE JANUARY 1980

Determined as of the last day of the month indicated



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HISTORICAL MARKET DATA

HISTORICAL EXCHANGE VALUES

Determined as of the last day of the month indicated (US Dollars/lb. U_3O_8)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1968	—	—	—	—	—	—	—	6.35	6.35	6.40	6.45	6.50
1969	—	6.35	6.10	6.10	6.25	6.25	6.20	6.20	6.15	6.15	6.15	6.20
1970	6.30	6.30	6.30	6.30	6.30	6.30	6.30	6.20	6.15	6.15	6.15	6.15
1971	6.20	6.20	6.20	6.20	6.15	6.05	6.00	5.95	5.95	5.95	5.95	5.95
1972	5.95	5.95	5.95	5.95	5.95	5.95	5.95	5.95	5.95	5.95	5.95	5.95
1973	5.95	6.00	6.10	6.20	6.45	6.50	6.50	6.50	6.50	6.50	6.75	7.00
1974	7.70	7.90	8.00	9.00	9.50	10.50	11.50	12.00	12.50	14.00	14.75	15.00
1975	16.00	16.00	18.00	20.00	21.00	23.00	24.70	26.00	26.00	28.50	30.00	35.00
1976	32.50	37.00	39.25	40.00	40.00	40.00	40.00	40.40	41.00	41.00	41.50	41.00
1977	41.35	41.50	41.60	41.60	42.00	42.25	42.25	42.25	42.40	42.75	43.20	43.20
1978	42.90	43.25	43.25	43.25	43.40	43.40	43.40	43.10	43.25	43.00	43.25	43.25
1979	43.25	43.25	43.25	43.25	43.25	43.00	42.70	42.70	42.20	42.20	41.00	40.75
1980	40.00	38.00	35.00	32.00	32.00	31.50	31.50	30.00	28.50	28.00	28.00	27.00
1981	25.00	25.00	25.00	25.00	25.00	24.25	23.50	23.50	23.50	23.50	23.50	23.50
1982	23.00	23.00	22.50	20.75	20.50	19.25	18.25	17.00	17.00	17.50	19.75	20.25
1983	21.50	21.75	22.25	23.25	23.50	23.50	24.00	24.00	24.00	23.50	22.50	22.00
1984	20.50	17.50	17.00	17.75	17.75	17.50	17.50	17.50	17.50	16.00	15.50	15.25
1985	15.00	15.00	15.00	14.25	15.00	15.00	15.75	16.00	16.00	16.50	16.75	17.00
1986	17.00	**17.00**										

HISTORICAL TRANSACTION VALUES

Determined as of the last day of the month indicated (US Dollars/lb. U_3O_8)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1976	—	—	—	—	39.60	39.70	39.70	40.40	40.30	40.60	40.70	40.70
1977	41.30	41.30	41.40	41.50	42.80	42.90	43.00	42.60	42.50	42.80	42.90	42.90
1978	43.10	43.30	43.70	43.60	43.60	43.20	43.30	43.40	43.40	43.60	43.40	43.70
1979	43.60	43.80	43.70	43.40	43.60	43.70	43.70	43.60	43.60	43.60	43.50	42.30
1980	42.00	39.30	38.60	38.40	37.90	37.60	37.30	31.60	30.60	29.00	28.70	27.70
1981	27.20	27.20	27.00	25.70	25.70	24.50	24.40	24.30	23.90	24.10	24.10	24.00
1982	24.00	23.70	23.40	22.60	22.70	21.50	20.30	19.10	17.30	17.00	17.55	18.80
1983	19.35	20.00	21.35	21.40	22.35	22.45	23.50	23.60	23.65	23.65	23.85	23.85
1984	23.05	22.50	19.25	17.90	17.00	16.50	16.60	16.40	16.55	16.05	15.90	15.90
1985	16.20	15.70	15.05	14.90	14.45	14.60	14.75	15.10	15.10	15.75	15.80	16.55
1986	16.55	**16.70**										

HISTORICAL CONVERSION VALUES

Determined as of the last day of the month indicated (US Dollars/lb. U in UF_6)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1981	1.20	1.20	1.20	1.40	1.15	1.15	1.15	1.10	1.10	1.10	1.20	1.20
1982	1.20	1.20	1.20	1.20	1.00	1.00	1.00	0.90	1.10	1.60	1.45	1.45
1983	1.20	1.40	1.40	1.20	1.20	1.20	1.10	1.10	1.00	0.60	0.60	0.60
1984	0.60	0.30	0.80	0.80	0.80	0.00	0.00	0.80	1.00	1.00	0.80	0.80
1985	1.00	1.00	1.00	1.50	1.50	1.60	1.60	1.60	1.60	1.60	1.60	1.60
1986	1.60	**1.80**										

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AUSTRALIA

	Price Index of Materials Used in Manufacturing Industry — All Groups[1] (1969 = 100)	Award Rates of Pay Indexes Australia — Adult Males In Mining Wage Earners, Weekly Rates[2] (1976 = 100)
1975 Avg.	150.4	132.6
1976 Avg.	168.4	160.9
1977 Avg.	192.0	179.0
1978 Avg.[3,4]	198.5	190.0
1979 Avg.	248.8	127.9
1980 Avg.	321.8	140.8
1981 Avg.	355.3	154.1
1982 Avg.[5]	368.6	174.9
1983 Avg.	401.2	181.8
Jan 1984	399.2	189.3R
Feb 1984	402.5	189.2R
Mar 1984	403.9	189.0R
Apr 1984	404.2	196.9R
May 1984	403.8	197.6R
Jun 1984	404.9	198.0R
Jul 1984	408.3	198.0R
Aug 1984	413.2	198.0R
Sep 1984	411.9	198.0R
Oct 1984	408.5	198.0R
Nov 1984	407.1	198.0R
Dec 1984	406.0	198.0R
FY84 Avg.[6]	402.1	—
FY85 Avg.[6]	422.2	—
Jan 1985	409.3	198.0R
Feb 1985	416.1	198.0R
Mar 1985	430.9	198.0R
Apr 1985	440.8	203.0R
May 1985	454.4	203.7R
Jun 1985	458.9	203.1R
Jul 1985	459.0	203.0R
Aug 1985	454.9	203.0R
Sep 1985	447.7	203.1R
Oct 1985	445.7	203.6R
Nov 1985	449.2	210.4
Dec 1985	—	210.5

P = Preliminary R = Revised since last month

[1]Australian Bureau of Statistics, Canberra: "Price Index of Materials Used in Manufacturing Industry" (Catalogue No. 6411.0).

[2]Australian Bureau of Statistics, Canberra: "Award Rates of Pay Indexes, Australia" (Catalogue No. 6312.0). Figures for the latest fourteen months shown are subject to revision.

[3]Monthly data for 1970-78 appear on pages 4.7 and 4.8 of Report 138.

[4]Annual averages prior to 1979 reflect index base no longer in use.

[5]Monthly data for 1979-82 appear on page 35 of Report 184.

[6]Annual averages are for financial year ending June 30.

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GOVERNMENT STATISTICS

CANADA

	Industry Selling Price Index: Manufacturing[1] (1971 = 100)	Wage-earner Data: Average Hourly Earnings (C$)[2]					
		Uranium Mines (SIC 057)	Metal Mines (SIC 051-059)	Mines, Quarries and Oil Wells[3] (SIC 051-099)	Primary Non-ferrous Metal Industries[4] (SIC 296)	(SIC 298)	Chemicals and Chemical Products[5] (SIC 370-379)
1979 Avg.[6]	217.9	—	9.60	9.66	—	—	7.67
1980 Avg.	247.2	—	10.58	10.80	—	—	8.50
1981 Avg.	288.7	—	12.02	12.23	—	—	9.53
1982 Avg.[7]	288.8	—	13.74	13.92	—	—	10.63
1983 Avg.	298.8	—	—	14.30	—	—	11.17
Jan 1984	305.4	17.74	15.27	14.74	11.91	10.84	11.69
Feb 1984	306.6	17.90	15.59	14.90	12.04	10.82	11.51
Mar 1984	308.7	18.05	15.52	14.82	12.14	10.84	11.58
Apr 1984	310.5	18.06	15.83	15.10	11.96	10.34	11.63
May 1984	310.6	18.48	15.64	15.06	12.11	10.16	11.65
Jun 1984	311.0	18.08	15.48	14.80	12.38	10.40	11.66
Jul 1984	312.9	17.81	15.72	14.92	12.53	10.18	11.82
Aug 1984	312.7	17.24	15.36	14.92	12.44	10.34	11.78
Sep 1984	312.3	17.68	15.96	15.34	12.51	10.52	11.90
Oct 1984	312.3	17.64	16.15	15.26	12.69	10.56	11.96
Nov 1984	313.6	18.04	16.13	15.43	12.47	10.51	11.96
Dec 1984	314.2	17.95	16.39	15.60	12.16	10.40	11.99
1984 Avg.	310.9	17.88	—	15.07	12.28	10.49	11.76
Jan 1985	315.9	18.05	16.13	15.60	12.32	10.80	12.04
Feb 1985	316.5	18.78	16.41	15.68	12.52	11.05	12.06
Mar 1985	318.0	18.24	16.21	15.57	12.44	10.97	12.02
Apr 1985	318.3	18.63	16.44	15.80	12.81	11.23	12.04
May 1985	318.8	19.41	16.51	15.63	12.76	11.25	12.15
Jun 1985	319.1	18.49	16.20	15.49	12.89	11.14	12.14
Jul 1985	319.3R	18.14	16.27R	15.41	12.96	11.17	12.13
Aug 1985	319.3R	17.07	16.03R	15.30	12.97	11.31	12.19
Sep 1985	319.6R	18.53	16.55	15.72	12.95	11.39	12.26
Oct 1985	320.8R	18.74	16.51	15.70	13.14	11.53	12.33
Nov 1985	321.8	19.05R	16.66R	15.88R	12.76R	11.32R	12.49R
Dec 1985	323.1	18.18P	16.56P	15.90P	12.43P	11.52P	12.65P

P = Preliminary R = Revised since last month

[1]Statistics Canada, Prices Division, Ottawa: "Industry Price Indexes" (Catalogue 62-011). Indexes for the most recent six months shown are subject to revision.
[2]Statistics Canada, Labour Division, Employment and Payrolls Section, Ottawa: "Employment, Earnings and Hours" (Catalogue 72-002).
[3]Reports 175 through 185 list this series title incorrectly as "Metal Mining, Including Milling (SIC 050-099)."
[4]Beginning with the April 1983 figure, Primary Metal Industries, non-ferrous is split into SIC 296 and SIC 298.
[5]Chemical and Chemical Products prior to April 1983 was SIC 370-379. The new series is from a new survey which includes all companies and is based on a 1970 classification. The old survey only included companies of 20 employees or more.
[6]Monthly ISPI for 1977 and 1978 appear on page 4.10 of Report 138, and monthly wage-earner data for 1973-78 appear on page 4.11 of Report 138.
[7]Monthly data for 1979-1982 appear on page 37 of Report 184. On that page, the wage earner index entitled "Metal Mining, Including Milling (SIC 050-099)" should read "Total Mining (SIC 051-099)."
[8]Beginning with the April 1983 figure, Wage Earner Data are based on a census of all companies employing 200 or more wage earners, *plus* a random survey of companies employing fewer than 200 wage earners. Prior to April 1983 only companies employing 200 or more wage earners are included in the Wage Earner Data.

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REPUBLIC OF SOUTH AFRICA

		Average Declared Working Costs per Metric Ton of Gold Ore Milled (Rand)[1]	Tonnage-Weighted Index of Average Working Costs per Metric Ton of Gold Ore Milled (March 1982 = 100)[2]	Consumer Price Index[3] (1980 = 100)[4]	Producer Price Index All Groups[5] (1980 = 100)	Total Employment in Mining and Quarrying (Code 35)[6]	Total Salaries and Wages in Mining and Quarrying (1,000 Rand) (Code 40)[6]
1975	Avg.	16.71	—	157.2	100.0	639,473	1,003,617
1976	Avg.	19.30	—	174.7	115.1	671,240	1,212,983
1977	Avg.	23.87	—	194.4	130.0	712,006	1,420,670
1978	Avg.	27.14	—	137.2	142.7	664,571	1,537,169
1979	Avg.[7]	30.18	—	155.3	164.5	692,209	1,830,632
1980	Avg.[8]	35.53	—	176.7	192.1	714,379	2,279,615
1981	Avg.	41.89	—	206.5	218.3	728,506	2,820,505
1982	Avg.[9]	47.25	104.2	233.5	248.7	707,552	3,246,071
1983	Avg.	51.87	115.0	262.2	274.8	696,579	3,644,772
Jan	1984	—	—	274.7	283.3	689,807	326,619
Feb	1984	—	—	278.4	286.5	702,553	335,906
Mar	1984	55.30	123.1	281.9	288.0	715,628	342,332
Apr	1984	—	—	286.1	290.2	712,963	327,550
May	1984	—	—	288.3	292.6	710,040	327,937
Jun	1984	56.95	126.2	291.2	295.3	717,009	347,121
Jul	1984	—	—	295.1	296.0	717,121	369,964
Aug	1984	—	—	297.0	300.8	721,905	361,357
Sep	1984	60.64	133.2	299.9	304.1	721,470	359,218
Oct	1984	—	—	303.7	308.7	717,865	363,755
Nov	1984	—	—	307.4	312.8	717,396	369,771
Dec	1984	62.92	138.6	309.4	315.9	701,198	365,234
Jan	1985	—	—	177.1	166.6	711,366	376,777
Feb	1985	—	—	182.8	171.3	727,932	361,823
Mar	1985	64.48	142.4	183.6	173.0	708,809	371,380
Apr	1985	—	—	187.4	174.0	724,187	369,005
May	1985	—	—	189.5	177.7	708,085	373,478
Jun	1985	67.42	148.9	191.9	179.2	724,587	395,543
Jul	1985	—	—	193.6	180.7	738,228	419,106
Aug	1985	—	—	195.6	183.2	734,121	416,777
Sep	1985	70.47	155.3	197.8	184.8	732,836	419,883
Oct	1985	—	—	200.8	188.1	—	—
Nov	1985	—	—	203.4	196.0	—	—
Dec	1985	72.43	160.1	207.4	199.4	—	—
Jan	1986	—	—	213.8	—	—	—

[1]Chamber of Mines of South Africa, Johannesburg; "Analysis of Working Results," published quarterly.

[2]Page 16 of Report 178 contains description and calculation of index, and page 24 of Report 178 lists figures for 1982.

[3]Republic of South Africa Department of Statistics, Pretoria; "Government Gazette: Consumer Price Index for Urban Areas."

[4]The basis for calculation prior to January 1985, 1975 = 100. For annual averages prior to 1978, April 1970 = 100.

[5]Previously known as the Wholesale Price Index, now the Producer Price Index. The computation remains the same. The basis for calculation prior to January 1985, 1975 = 100.

[6]Bulletin of Statistics, Department of Statistics, Pretoria.

[7]Historical data for the Average Declared Working Costs and Consumer Price Index 1970-1979 appear on page 4.9 of Report 140.

[8]Monthly data for Codes 35 and 40, 1977-1980, appear on page 28 of Report 157.

[9]Monthly data for 1979-82 appear on page 39 of Report 184.

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GOVERNMENT STATISTICS

UNITED STATES

	Producer Price Index[1]		Consumer Price Index[2]	GNP Implicit Price Deflator[3,4]	Gross Average Hourly Earnings of Production or Non-supervisory Workers (US$)[5]			
	Industrial Commodities (1967 = 100)	All Commodities (1967 = 100)	(1967 = 100)	(1982 = 100)	Metal Mining (SIC 10)	Primary Non-ferrous Metals (SIC 333)	Chemicals and Allied Products (SIC 28)	Electric and Electronic Equipment (SIC 36)
1980 Avg.[6]	274.8	268.8	246.8	178.64	10.26	10.63	8.30	6.94
1981 Avg.	304.1	293.4	272.4	195.51	11.55	11.98	9.12	7.62
1982 Avg.[7]	312.3	299.3	289.1	207.15	12.33	12.94	9.96	8.21
1983 Avg.	315.8	303.1	298.4	215.63	12.57	13.43	10.59	8.65
Jan 1984	319.1	308.0	305.2	—	12.68	13.37	10.88	8.91
Feb 1984	320.6	308.9	306.6	—	12.83	13.33	10.87	8.91
Mar 1984	321.9	311.0	307.3	106.6	12.89	13.32	10.96	8.94
Apr 1984	322.5	311.4	308.8	—	12.94	13.29	10.94	8.94
May 1984	323.3	311.7	309.7	—	13.02	13.36	11.99	8.94
Jun 1984	323.9	311.4	310.7	107.6	12.99	13.39	11.00	8.97
Jul 1984	324.0	312.0	311.7	—	13.06	13.34	11.09	9.00
Aug 1984	323.5	310.9	313.0	—	13.15	13.50	11.09	9.05
Sep 1984	322.3	309.5	314.5	108.6	13.23	13.38	11.20	9.13
Oct 1984	323.2	309.4	315.3	—	13.26	13.53	11.29	9.15
Nov 1984	323.8	310.4	315.3	—	13.27	13.74	11.31	9.20
Dec 1984	323.0	309.9	315.5	109.6	13.32	13.64	11.34	9.32
1984 Avg.	322.6	310.3	311.1	108.1	13.05	13.43	11.08	9.04
Jan 1985	322.9	309.5	316.1	—	13.29	13.70	11.39	9.33
Feb 1985	322.5	309.2	317.4	—	13.30	13.73	11.39	9.33
Mar 1985	322.6	308.7	318.8	110.4	13.29	13.95	11.37	9.39
Apr 1985	323.8	309.3	320.1	—	13.43	13.62	11.48	9.40
May 1985	325.3	309.8	321.3	—	13.24	13.59	11.46	9.39
Jun 1985	324.8	309.2	322.3	111.3	13.23	13.66	11.52	9.46
Jul 1985	324.4	309.0	322.8	—	13.45	13.82	11.60	9.47
Aug 1985	323.7	307.3	323.5	—	13.55	13.69	11.62	9.50
Sep 1985	322.2R	305.9R	324.5	112.1	13.44	13.66	11.67	9.55
Oct 1985	324.4	308.0	325.5	—	13.49	13.64	11.72	9.56
Nov 1985	325.0	309.7	326.6	—	13.49	13.95	11.82	9.61
Dec 1985	325.2	310.2	327.4	113.0	13.48P	13.76P	11.88R	9.70R
Jan 1986	324.0	309.0	328.4	—	—	—	11.89P	9.66P

P = Preliminary R = Revised since last month

[1]US Bureau of Labor Statistics, Washington, D.C.: "Producer Prices and Price Indexes," (formerly "Wholesale Prices and Price Indexes"). Producer Price Indexes are revised four months after they are first released to reflect the availability of late reports and corrections by respondents.

[2]US Bureau of Labor Statistics, Washington, D.C.: Consumer Price Index for All Urban Consumers, US City Average, All Items.

[3]US Department of Commerce, Washington, D.C.: Bureau of Economic Analysis, National Income and Wealth Division: "Survey of Current Business." The GNP Implicit Price Deflator is published quarterly, and seasonally adjusted

[4]The basis for calculation of this index was revised to 1982 = 100. 1984 and 1985 figures have been adjusted to that basis. The basis for calculation prior to 1984, 1972 = 100.

[5]US Bureau of Labor Statistics, Washington, D.C.: "Employment and Earnings." All data based on 1972 revision of SIC Manual. Data for 1970-1976 are adjusted to the March 1977 benchmark. Data for 1977-1978 are adjusted to the March 1979 benchmark. Data for January 1979 and beyond are adjusted to the March 1980 benchmark.

[6]Monthly data 1970-1978 for Producer Price Index-Industrial Commodities, Consumer Price Index, and Employment and Earnings SIC codes 10, 333, and 28, and quarterly data for GNP Implicit Price Deflator appear on pages 4.6-4.8 of Report 139.
Monthly data 1977-1978 for Employment and Earnings SIC Codes 10, 333, and 28 appear on page 33 of Report 147.
Monthly data 1970-1978 for Employment and Earnings SIC Code 36 appear on page 23 of Report 154.
Monthly data 1977-1980 for Producer Price Index-All Commodities, appear on page 21 of Nuexco Report 158.

[7]Monthly data 1979-1982 for all listed indices appear on page 41 of Report 184.

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